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ABSTRACT

The Madeira School (McLean, Virginia) had been behind on advanced technology as compared to many of its competitor schools. In the fall of 1996, the cornerstone for the Savvy With All Technology (SWAT) team program was laid. The idea of SWAT was to infiltrate departments with technology specialists and users so that technology would be used across the curriculum in instruction and learning. This paper explains the SWAT program in detail, starting with the program vision, goals, and objectives. Member selection and expectations are discussed, as well as supporting programs that enabled and facilitated the SWAT program. Two specific projects-- a science project and a performing arts project--spearheaded by the SWAT program are described, showing the impact of technology application in the classroom through teacher instruction, student-teacher interaction, and student learning. Finally, the next steps for the program are highlighted as Madeira looks ahead to more integration of technology into all classrooms. (AEF)

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The SWAT Team: Successfully Integrating Technology into the Curriculum

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Madeira had been behind on the advancement technology as compared to many of the competitor schools. In 1995, a major push had started to bring technology to campus. The school funded laptops and desktops to all full-time faculty, and also provided a one week intensive training program by outside technology consultants to bring the faculty up to speed on how to use their computers. The groundwork had been laid for getting technology into the classroom by first giving the faculty the needed equipment and training. Eighteen months later, the faculty only superficial computer users. There had been little follow-up or continued training for faculty to increase their skills and confidence level. Unfortunately, the use was limited to prepare report card comments.

In the Fall of 1996, the cornerstone for the Savvy With All Technology (SWAT) team program was laid. The idea of SWAT was to infiltrate departments with technology specialists and users so that technology would be used across the curriculum in instruction and learning. Dr. Griffith and the administrative team at Madeira approved the Madeira Philosophy Of Technology Use mission statement. This clearly defined how technology would be incorporated and used in the school environment. The statement reads a follows:

> We believe that the integration of technology into our community provides us with vital learning and teaching tools, both inside and outside the classroom, and that the technology should serve to support, enhance and expand the educational goals already established by the Madeira community.

This paper will attempt to explain the SWAT program in detail, starting with the program vision, goals, and objectives. Member selection and expectations will be discussed, as well as supporting programs that enabled and facilitated the SWAT program. Two specific projects spearheaded by the SWAT program will be discussed showing the impact of technology application in the classroom through teacher instruction, student-teacher interaction, and student learning. Finally, the next steps for the program will be highlighted as Madeira looks ahead to more integration of technology into all the classrooms.

The SWAT Team Vision

With the mission statement in place, the SWAT team would have direction and purpose in their work. The vision for the SWAT Team was three-fold:

- to create a formal vehicle for integration of technology into the curriculum
- to foster technology leaders in the classroom
- to form a technology support group.

It became obvious that two teams were needed on campus: an academic group and an administrative group. Both had specific concerns, needs, and technology issues, and both could be facilitated through a group forum. Therefore, an academic SWAT team was created to focus on integrating technology into the curriculum and an administrative SWAT team was created to focus on how technology could facilitate work flow and information exchange within and among the different constituents on campus. This paper specifically focuses on the formation, implementation, and successes of the academic SWAT team.

Member Selection

SWAT members were selected using input from several sources. To be a truly representative team, the team needed to be composed of a member from each academic department plus a representative from the library. It was important to select someone who had some prior technology skills or special interest in technology. Each of the department heads were solicited for input about which department member would be their best candidate for the SWAT team. We also encouraged teachers to nominate themselves for review and participation in the SWAT program. After all the information was gathered, the candidate list was reviewed and the team was selected. Confirmation letters with the program goals and member expectations were sent out to the team. The SWAT team was formally recognized at the following faculty meeting as a new and vital part of the community.

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SWAT Team Member Goals

The goals for the SWAT team members within each department were straight-forward and clear. Within his/her department SWAT team members:

- advocate technology
- provide leadership within his/her department and school-wide
- provide guidance and support to other department members as they incorporate
- technology into their teaching
- identify new software and programs for curricula area
- pilot a project in at least one course within the first year

SWAT Team Member Expectations

Additionally, there were performance expectations for each SWAT member. They are as follows:

- each academic department would provide one member to serve on the SWAT team
- each team member would make a three year commitment to the program
- members would attend monthly meetings
- members would provide informal training, support, and/or troubleshooting to his/her department members
- team members would receive a stipend or compensation for participation in the 1998-99 school year

SWAT Team Objectives

The first SWAT team meeting focused on setting the objectives for the coming year. It was also an opportunity for everyone to contribute to the establishment of the program's objectives. Creating a shared vision empowers the group and fosters ownership in the program. The successes became everyone's success and it also encouraged the members to work and achieve at higher level. The objectives established at our first meeting were:

- improve information exchange between academic and administrative offices
- integrate technology activities into the curriculum on a scheduled basis
- incorporate two technology activities per quarter
- establish new work habits that include technology (e.g., email)
- SWAT or Department of Technology (DOT) members would assist department faculty and staff in early lessons if needed

Additional Issues

It is also interesting to note that a significant amount of time was spent talking about how technology could help with tedious and repetitious school tasks. It became clear that technology was needed to help facilitate mc " of the reports that faculty were required to prepare on a regular basis. These reports included: report cards, interim reports, quarterly comments, and daily attendance. The administrative aspects of technology for faculty would be handled by the DOT separately, since they had nothing to do with classroom instruction.

The MEANS

At the beginning of the 1996-97 school year there was not a campus network at Madeira. There were several isolated networks in several of the administrative offices, such as Development and Business Offices, but none of these networks worked together or allowed for any information sharing. The first task was to get all of the offices, both administrative and academic, linked together. Systematically, the network was created using 10-Base T technology, Tut repeaters, and the Internet to establish the Madeira Educational Access Network Service (MEANS). For those offices and buildings that were too far away from the center of campus, a dial-in capability was established. Users from the performing arts building, for example, which is located about a half mile from the network operations control center, had the facility to dial-in to the network for Internet access and mail retrieval. It took about six months to get all eleven buildings on campus connected to the MEANS. Interestingly enough, within a year, the network traffic is so great that Madeira is now considering upgrading the backbone of the MEANS to a fiber optic network.

Implementation of Supporting Technology Initiatives for the SWAT Program

In order for the SWAT program to function, the Department of Technology needed to implement a series of supporting technologies campus-wide. The first of these was the establishment of a wide area network, the Madeira Educational Access Network Service (MEANS). It was crucial to connect all of the academic and administrative offices to the network in an effort establish better communications among all the school's constituents. The next step was the implementation of email for faculty, staff and students. Third, we standardized the campus productivity software to the Microsoft Office, so that everyone could easily exchange information. Fourth, Madeira connected to the World Wide Web through a T-1 connection. Additionally, the DOT provided training for faculty and staff during the school year and during the summer to raise the level of proficiency among the users. Lastly, the DOT provided technology grants to faculty and departments for additional training or equipment so that they could direct and implement the type of technology they wanted within their curricular area. A brief description of each of these initiative follows.

Email For Faculty, Staff And Students

Once the network was growing, the implementation of email campus-wide was the next logical step. In an effort to conserve costs, the DOT decided to use Eudora Lite for its email software. Eudora Lite, and now Eudora Pro, are free to educational institutions. We determined that if this proved

to be a successful form of communications in our environment, then we could upgrade to a more complex program at a later date. The implementation was done in a phased approach with the progression as follows: the administrative staff, the academic faculty and offices, the international boarding students, the rest of the boarding students, and the day students. Everyone on campus had an email account by the middle of March, 1997, and our daily exchange of messages went from zero to over 3,000 email messages.

Standardization Of The Campus Productivity Software

Another obstacle that prevented the most effective communications and information exchanges stemmed from the lack of a standard productivity software for all computer users. The administrative offices were using WordPerfect, both the DOS 5.1 version and the Windows 6.0/6.1 version, while the academic offices were using a similar mix of WordPerfect, Microsoft Works, and ClarisWorks, and the student labs had ClarisWorks. The admissions office had difficulty exchanging information with the development office, because document formatting would get lost in the conversion from one software package to another. The DOT proposed the establishment of a campus standard for computer productivity software so that everyone would be on the same.

The headmistress and the administrative team adopted the DOT's proposal to standardize the Madeira campus to the Microsoft Office Suite. The Microsoft Office Suite was selected for four reasons:

1. It supported the goal of technology integration into the community because it was a full-feature suite of productivity software that included word processing, spreadsheet, database and presentation tools.
2. It expanded our ability to communicate effectively and exchange information easily.
3. It is a package from an industry leader and stable company.
4. It is available for cross-platform environments where the functionality of the software on the Macintosh or the PC-compatible Windows machine are the same.

The Internet Connection. The method the DOT used to create the MEANS was made possible through the school's connection to the Internet. Netscape Navigator software was added to all the campus equipment in the student computer labs, the administrative and academic offices, and the library. In fact, a separate Internet research lab was established in the library to give students the opportunity to use the Web for research or information gathering anytime the library was open.

Faculty and Staff Training. The decision to move to a standard productivity software meant that all the staff and faculty would need training on how to use the new software. The training was comprised of two different tracks: the administrative track, providing six hours of intense Word training and file management, while the academic track consisted of nine hours of training focusing mainly on using Word, but also providing an introduction to PowerPoint and Excel. Training was provided on Windows 3.1, Windows 95, and the Macintosh Operating System. While training was optional, and there was no additional compensation. Approximately 60% of the staff and faculty attended the training sessions offered.

Technology Grants. The Board of Directors designated technology grants as a means of helping fund technology projects for the classroom. The DOT had allotted approximately $50,000 the previous year for a variety of department lead activities. For the 1997-98 school year, the DOT increased the amount of technology grant money to $75,000, approximately 50% of the school's technology budget, to facilitate and support SWAT team efforts departmentally. Major grants were awarded for both equipment and training to the science program, the performing arts program and the foreign language program. Additional grants were given to the librarians, history, and DOT members for specialized training of technology use in the classroom.

SWAT Projects for the 1997-98 School year

While all of the disciplines have been working on integrating technology into the classroom, two of the SWAT projects are real standouts. They standout for several reasons, but primarily because of the scope of their impact. The SWAT team projects have had a significant impact on teacher delivery methods, teacher-student interaction, and student learning. A description of each of the projects and the scope of their impact follows this introduction.

The Science Project

The science department proposed a full-featured technology grant that included a mix of equipment and training for all three of the science curricula. The biology and environmental science teachers wanted a cluster of four Macintosh computers to run a variety of course content-specific software, as well as enable students to use the Microsoft Office software to write up lab reports, construct data tables using Excel, and create presentations using PowerPoint. They also asked for a presentation system for instruction purposes which was composed of an AV Power Macintosh and 27 inch monitor. The chemistry teachers asked for a PC-compatible presentation system to facilitate lectures and the physics teacher asked for PC-compatible probes to gather data for use in classroom demonstrations and experiments. The entire grant was funded and the results have been astounding.

Daily, one can observe the chemistry teachers lecturing using the presentation system and delivery of the course

material through PowerPoint. Students are given the basic slides as handouts and use the outline as a guide for taking notes. The teachers felt that the students were able to take better notes since they were able to concentrate on the details of the lecture. The students felt the lectures were better organized, and if the discussion got off track it was easy to get back on track with the notes already in hand. The impact on both teaching and learning, as well as the method of instructional delivery, have all served to improve the educational environment.

The biology cluster and presentation system have been successful as well. The computers loaded with course content-specific software provided students the opportunity to experience the material they learned in a new manner. Students were able to watch mitoses and meiosis on their computer screen. They were also able to replay the events as many times as needed to understand the process. The teacher was free to assist those who need with more individualized attention, while others who grasped the concepts more easily could move ahead to more challenging parts of the same lesson. Personal exchange between student and teacher was dramatically enhanced.

Finally, the physics probes used in combination with the PC-compatibles in the physics lab have greatly facilitated data gathering and measurement. Students experience how professionals would gather similar information in a real lab environment and then use that data to draw conclusions about their subject matter. Here, the physics teacher assumes the role of a facilitator.

The Performing Arts Project. Similar to the science project, the performing arts project has three parts which focus on integration of technology into the curriculum. They are: technology in dance choreography, technology in the theater through set design and desktop publishing, and technology in music. All three facets of the performing arts project have had an impact on learning, instruction methods and the level of satisfaction with the final product.

The dance instructor has incorporated technology into the dance curriculum by purchasing choreography software to use in the advanced dance courses. Students will be creating their own choreography using the mini-lab of computers housed in the dance studio itself. Once the choreography is complete, the dancers can then have the class perform the dance as written and make adjustments as needed along the way. Students feel empowered to direct the class and the development of valuable leadership skills have been one of the additional benefits to the introduction of technology.

The theater director has incorporated technology into the theater arts classes through set design and desktop publishing. Plans for the set can be drawn and redrawn easily, and materials needs can be estimated at a tremendous savings. Desktop publishing is taught to create the programs for each production and the final product has dramatically improved since its introduction. The director, the students, and the audience directly benefit from programs that are clean, clear, and easy to read.

Finally, technology in the music program assists in helping students compose and arrange music. Many of the previous obstacles to musical composition, such as notation, arrangement, and changing the key, has been eliminated with the use of technology. Students can focus on the mood or feeling of the pieces more than the mechanics of which note is flat or sharp. It has encouraged students to compose music who previously would have never tried to do so, and has therefore, enriched their educational experience.

The Next Steps

The next steps for the SWAT program will be to take the successes experienced in the science and performing arts program and use them as archetypes for the other departments. The challenge of changing instructional styles in the history and English departments will be formidable as the faculty in both these departments are well-established professionals who have achieved a high level of success with the 'tried and true' methods they have used for many years. Additional money for training and an experienced curricular specialist will be one of the avenues to pursue.

Conclusion

The formation of the SWAT team at Madeira has significantly increased the use of technology in the curriculum as well as across the community at large. There are several key points to consider:

- For technology integration to be successful in our environment, it was essential that the ideas for use come from the ground-up and not from the top-down.
- The SWAT team gives individual members the opportunity to act as a sounding board and troubleshooter for each other as projects developed when problems erupted.
- The school must also dedicate its resources in making the program successful, which means staff development and money. Mission statements alone cannot bring about change. Supporting initiatives, such as network connectivity, and email, can expedite the entire project.
- Most importantly, persistence is the key to any successful program. Evaluate often what's happening often so that changes can be made for even greater success. There is no right or wrong with technology application; it is what is most appropriate in a given situation and what will be effective for the desired outcome.

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